Regularization/R (Q7L8) 30% (6/20)

✗ **1. In Poisson regression...**

(A) The asymptotic distribution of the maximum likelihood estimates is multivariate normal.

(B) The distribution of the maximum likelihood estimates is multivariate normal.

(C) The asymptotic distribution of the maximum likelihood estimates is multivariate Poisson distribution.

(D) I do not know

✓ **2. In the case of intercept-only model**

(A) The mean of the dependent variable equals the exponential value of intercept

(B) The mean of the dependent variable equals the intercept

(C) The mean of the dependent variable equals 0

(D) I do not know

✗ **3. ln(lambda) = 0.6 - 0.2* female [lamda = the average number of articles] Note: e^(-0.2)=0.78**

(A) One unit increase in female brings a 0.2 decrease in ln(lambda).

(B) Being female decreases the average number of articles by 0.78 percent

(C) Being female decreases the average number of articles by 22%

(D) I do not know

✓ **4. In the multiple linear regression, we assume that...**

(A) The number of observations is much larger than the number of variables (n>>p)

(B) The number of observations is slightly larger than the number of variables (n>p)

(C) The number of observations equals than the number of variables (n=p)

(D) The number of observations is lees than the number of variables (n<p)

(E) It is not important

(F) I do not know

✗ 5. The way of solving the problem of a large number of variables is...

A Subset Selection & Shrinkage (Regularization)

B Shrinkage (Regularization) & Maximum Likelihood estimation

C Dimension Reduction & OLS estimation

D I do not know

E The absence of the right answer

✗ 6. The bias of an estimator (e.g. z^) equals...Hint: the OLS coefficients are unbias :)

A E(z^) - z

B E(z^2) - [E(z)]^2

C [E(z^2) - E(z)]^2

D E(z^2)

E I do not know

✗ 7. The main idea of regularization is

A To introduce a small amount of bias in order to have less variance.

B To introduce a small amount of variance in order to have less bias.

C To introduce a small amount of variance and bias in order to have less bias.

D I do not know

✓ 8. With which function we can show regularization in R

A glmnet()

B regular()

C lm()

D glm()

E I do not know

✗ 9. How the tune of any parametr can be made

A using Cross validation

B It is impossible

C I do not now

D using larger sample

E only having population

✗ **10. Elastic Net is**

- A the combination of L1 and L2 regularization
- B the combination of L2 and L3 regularization
- C is independent from other types of refularization
- D I do not know
- E not a type of regularization

✗ **11. Regularization is used only for**

- A Poisson Regression
- B Linear Regression
- C Logistic Regression
- D any regression
- E I do not know

✓ **12. Regularization can solve the problem of**

- A heteroscedasticity
- B multicollinearity
- C autocorrelation
- D I do not know

✓ **13. As a result of regularization we will have**

- A smaller slope than in case of OLS
- B larger slope than in case of OLS
- C the slope remains the same
- D I do not know

✗ **14. The ridge coefficient estimates shrink towards zero**

- A when lambda increases
- B when lambda decreases
- C when lambda = 0
- D I do not know

✗ 15. Which one can shrink the slope all the way to 0?

(A) Lasso
(B) Ridge
(C) Regression
(D) I do not know

✓ 16. When lambda = 0, we have

(A) Ridge
(B) Lasso
(C) EL
(D) Regression
(E) I do not know

✗ 17. When alpha = 0, we have

(A) Ridge
(B) Lasso
(C) EL
(D) Regression
(E) I do not know

✗ 18. ...variables need to be incorporated in the model according to domain knowledge...

This statement is true for...

(A) Ridge
(B) Lasso
(C) EL
(D) Regression
(E) I do not know

✗ 19. Which function can help to perform cross-validation for regularization in R?

(A) cv.glmnet()
(B) cros_val()
(C) glmnet(method = "cv)
(D) I do not know

20. Why we use set.seed() in R?

A To have universal result

B To perform better result

C To have random models

D I do not know